

**NEW JERSEY ADMINISTRATIVE CODE  
TITLE 7.  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**CHAPTER 28  
RADIATION PROTECTION PROGRAMS**

**SUBCHAPTER 41 MERCURY VAPOR LAMPS**

**7:28-41.1 Purpose and scope**

This subchapter applies to indoor and outdoor facilities using mercury vapor lamps for illumination and establishes safety requirements for their use.

**7:28-41.1 Definitions**

The following words and terms, when used in this subchapter, shall have the following meanings unless the context clearly indicates otherwise.

“Mercury vapor lamp” means a mercury vapor or metal halide lamp incorporating a high-pressure arc discharge tube that has a fill consisting primarily of mercury and that is contained within an outer envelope (it does not include the tungsten filament self-ballasted mercury vapor or metal halide lamp).

“New facility” means any building for which a certificate of occupancy has been issued subsequent to the effective date of this subchapter.

“Non-self-extinguishing mercury vapor lamp” means a mercury vapor lamp which does not comply with the requirements for a self-extinguishing mercury vapor lamp, hereinafter defined.

“Outer envelope” means the lamp element, usually glass, surrounding a high-pressure arc discharge tube, that when intact, attenuates the emission of ultraviolet radiation.

“Self-extinguishing mercury vapor lamp” means a mercury vapor lamp which shall cease operation within a cumulative operating time not to exceed 15 minutes following breakage or removal of at least three square centimeters of contiguous surface of the outer envelope. Self-extinguishing lamps manufactured prior to September 7, 1981 shall cease operation within a cumulative operating time not to exceed 15 minutes following complete breakage or removal of the outer envelope.

“Shortwave ultraviolet radiation” means radiation with a wave-length shorter than 320 nanometers.

**7:28-41.1 General requirements for indoor installations**

(a) No person shall cause, suffer, allow or permit the installation or use of a mercury vapor lamp in any indoor area which may be occupied by people unless the following requirements are met:

1. The mercury vapor lamp is of the self-extinguishing type; or
2. The mercury vapor lamp is of the non-extinguishing type provided it is installed within a totally enclosed lighting fixture with a protective shield which protects the lamp from damage and absorbs shortwave ultraviolet radiation.

(b) The provisions of this section shall be fully met within one year after the effective date of this

chapter.

#### **7:28-41.1 General requirements for outdoor installations**

(a) No person shall cause, suffer, allow or permit the installation or use of a mercury vapor lamp in any outdoor area where people are likely to remain in the area of illumination for periods in excess of 15 minutes unless the following requirements are met:

1. The mercury vapor lamp is of the self-extinguishing type; or
2. The mercury vapor lamp is of the non-extinguishing type provided it is installed within a totally enclosed lighting fixture with a protective shield which protects the lamp from damage and absorbs shortwave ultraviolet radiation.

(b) The Department may exempt certain outdoor mercury vapor lamp installations from the provisions of (a) above, provided the Department has determined that sufficient precautions have been taken to minimize the possibility of over-exposure to shortwave ultraviolet radiation.

(c) The provisions of this section shall be met within one year after the effective date of this subchapter.

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**SUBCHAPTER 42. RADIO FREQUENCY RADIATION**

**7:28-42.1 Scope**

- (a) This subchapter governs exposure to radio frequency radiation from fixed radio frequency devices.
- (b) This subchapter shall not apply to the intentional exposure of patients to radiation for the purpose of diagnosis, treatment or investigation for the prevention or control of disease.

**7:28-42.2 Purpose**

The purpose of this subchapter is to define safety requirements for the use of radio frequency devices that radiate in the frequency range 300 kHz to 100 GHz in order to prevent possible harmful effects in human beings from exposure to such radiation.

**7:28-42.3 Radio Frequency Protection Guides (RFPG)**

(a) Radio frequency devices, excluding microwave ovens, shall be maintained as follows:

- 1. No person shall cause, suffer, allow or permit the use of a radio frequency device which exposes or may expose any worker or member of the public to radio frequency radiation which is in excess of the applicable Radio Frequency Protection Guide in N.J.A.C. 7:28-42.4.
- 2. At frequencies between 300 kHz and 100 GHz, the RFPG in N.J.A.C. 7:28-42.4 may be exceeded if the exposure conditions can be shown by laboratory procedures to produce specific absorption rates (SARs) below 0.4 W/kg as averaged over any one gram of tissue.

(b) Microwave ovens shall be maintained as follows:

- 1. No person shall cause, suffer, allow or permit the use of a microwave oven manufactured after October 6, 1971 that radiates in excess of  $5\text{mW/cm}^2$  at any point 5cm or greater from any external surface of the oven.
- 2. No person shall cause, suffer, allow or permit the use of a microwave oven manufactured before October 6, 1971 that radiates in excess of  $10\text{mW/cm}^2$  at any point 5cm or greater from any external surface of the oven.
- 3. Measurements shall be made with the microwave oven operating at its maximum output and with a container of  $275^{+/-} 15$  ml of tap water at an initial temperature of  $20 \pm 5^\circ\text{C}$  placed on the carrying surface provided by the manufacturer.

- i. The container shall be a low form 600 ml beaker having an inside diameter of approximately 8.5 cm and made of electrically non-conductive material such as glass or plastic.

#### 7:28-42.4 Radio Frequency Protection Guides(RFPG) for whole body exposure

Frequency Range	Mean Squared Electric Field Strength (V/m) <sup>2</sup>	Maximum Allowed Mean Squared Magnetic Field Strength (A/m) <sup>2</sup>	Equivalent Plane Wave Power Density (mW/cm <sup>2</sup> )
300 kHz - 3 MHz			100
3 MHz - 30 MHz	400,000	2.5	900/f <sup>2</sup>
30 MHz - 300 MHz	4,000 (900/f <sup>2</sup> )	0.025 (900/f <sup>2</sup> )	1.0
300 MHz - 1.5 GHz	4,000	0.025	f/300
1.5 GHz - 100 GHz	4,000 (f/300) 20,000	0.025 (f/300) 0.125	5.0

Note 1. f-frequency (MHz)

Note 2. For near field exposure, both the mean squared electric and magnetic field strengths shall be determined.

Note 3. For frequencies below 300 MHz, both the mean squared electric and magnetic field strengths shall be determined.

Note 4. At frequencies above 300 MHz, either the mean squared electric or magnetic field strengths shall be determined.

Note 5. The applicable RFPG shall be averaged over any 0.1 hour interval.

Note 6. Measurement to determine adherence to the RFPG shall be made at distances 5 cm or greater from any object.

Note 7. Where electromagnetic fields are present at more than one frequency or for broadband fields, the fraction of the RFPG incurred within each frequency interval shall be determined and the sum of all such fractions shall not exceed unity.

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**SUBCHAPTER 48.**

**FEEES FOR THE REGISTRATION OF NONIONIZING RADIATION PRODUCING SOURCES**

**7:28-48.1 Scope, purpose and general provisions**

- (a) This subchapter establishes initial registration fees and annual renewal fees for all radiofrequency and microwave heaters, sealers and industrial ovens, and imposes reporting requirements on the owners of these sources. The fees collected by the Department will support a program that will assure the compliance of the regulated sources with the applicable provisions of N.J.A.C. 7:28-42.
- (b) Each owner of a nonionizing radiation producing source that is subject to this subchapter is responsible for ensuring compliance with all requirements of this subchapter. If there is more than one owner of a nonionizing radiation producing source, each owner is jointly and severally liable for complying with all the requirements of this subchapter.
- (c) If an owner fails to comply with any of the Department's requests made pursuant to this subchapter, the Department may assess a penalty in accordance with N.J.S.A. 26:2D-13.

**7:28-48.2 Definitions**

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

A Controlling interest $\equiv$  means the interest held by the person or persons who owns more than 50 percent of the voting stock or other equity interest in an owner; it also means the interest held by a person or persons who owns 50 percent or less of the voting stock or other equity interest in an owner and who possesses, directly or indirectly, the power to direct or cause the direction of the management and policies in an owner.

A Dispose $\equiv$  or A disposal $\equiv$  means the discarding or destroying of a nonionizing radiation producing source.

A Gigahertz $\equiv$  (GHz) means 1,000,000,000 hertz or cycles per second.

A Kiloherzt (kHz) means 1,000 hertz or cycles per second.

A Megahertz $\equiv$  (MHz) means 1,000,000 hertz or cycles per second.

"Microwave heater, sealer and industrial oven" means any source which uses microwave radiation between the frequencies of 300 MHz and 100 GHz to heat, melt, dry, cure, sanitize, disinfect or alter the chemical composition of materials such as, but not limited to, plastics, rubber, glue, wood, dyes or food.

"Microwave radiation" means, for the purposes of this subchapter, nonionizing radiation between the frequencies of 300 MHz and 100 GHz. (By convention, microwave radiation describes all the frequencies between 300 MHz and 300 GHz. Microwave radiation is a subset of the radiofrequency

radiation spectrum.)

A Nonionizing radiation $\equiv$  means radiation which does not have the capability of ionizing the medium through which it is passing.

"Nonionizing radiation producing source" or "source" means, for the purposes of this subchapter, any equipment, machine or device capable of emitting nonionizing radiation between the frequencies of 300 kHz and 100 GHz.

"Owner" means a person who has title to a radiation source or who possesses a radiation source as a lessee, bailee, or pursuant to the terms of a registration issued by the Department, by a Federal agency, or by any other state

"Radiation Assessment Document" means a form or series of forms issued by the Department requiring information such as, but not limited to, radiation frequency, duty cycle of each source, the source operator's position in relation to each source, and any additional information which will be used to predict radiation levels in the areas surrounding nonionizing radiation producing sources.

"Radiofrequency radiation" means, for the purposes of this subchapter, nonionizing radiation between the frequencies of 300 kHz and 100 GHz. (By convention, radiofrequency radiation describes all the frequencies below 300 GHz, with microwave radiation as a subset of the radiofrequency radiation spectrum.)

"Radiofrequency heater and sealer" means any source, including induction and dielectric heaters, which uses radiofrequency radiation between the frequencies of 300 kHz and 299MHz to heat, melt, dry, cure, sanitize, disinfect or alter the chemical composition of materials such as, but not limited to, plastics, rubber, glue, wood, dyes or food.

"Registration" means the submission by the owner and receipt by the Department of the completed registration form and Radiation Assessment Document, and the payment of fees.

A Transferee $\equiv$  means a person who obtains either:

1. Ownership of a nonionizing radiation producing source; or
2. A controlling interest in the owner of such a source.

A Transferor $\equiv$  means a person who sells or otherwise transfers either

1. A nonionizing radiation producing source
2. A controlling interest in the owner of such a source.

### 7:28-48.3 Registration of a nonionizing radiation producing source

(a) (Reserved)

(b) No owner shall operate a nonionizing radiation producing source listed in (b)1 or 2 below unless the owner completes the registration form and it is received by the Department by March 4, 1995. Thereafter, no owner shall operate the sources listed in (b)1 or 2 below unless the owner completes the registration form and it is received by the Department 30 calendar days after the owner takes possession of any of the sources listed below:

1. Radiofrequency heaters and sealers; or
2. Microwave heaters, sealers and industrial ovens.

(c) An owner shall register on forms made available by the Department. The registration form shall include the following information:

1. Owner's name, address and telephone number.

2. Type of source(s).
  3. Number of sources(s).
  4. Location of source(s).
  5. Frequency or frequency range of radiation emitted from each source.
  6. Any additional information which is reasonably necessary to identify the source or the owner of the source.
- (d) An owner shall produce immediately, upon request by the Department, a copy of the completed registration form.
- (e) If an owner of a nonionizing radiation producing source fails to register that source with the Department, and the Department has reason to believe that the source is a radiofrequency or microwave heater, sealer, or industrial oven, the Department may require the owner to provide information on the source and may conduct an inspection of the source, facility and any documents or records pertaining thereto.

#### 7:28-48.4 Amendments to the registration of a nonionizing radiation producing source

An owner shall notify the Department in writing within 30 calendar days of any change in the information on the registration form.

#### 7:28-48.5 Radiation Assessment Document

- (a) An owner shall submit to the Department a Radiation Assessment Document, on forms made available by the Department, no later than 60 calendar days after the owner's receipt of the bill for the initial registration fee.
- (b) (Reserved)
- (c) For sources listed in N.J.A.C. 7:28-48.3(b), the Radiation Assessment Document shall include the following information:
1. Owner's name, address and telephone number.
  2. Type of source(s).
  3. Number of source(s).
  4. The location of each source.
  5. Frequency or frequency range of radiation emitted from each source.
  6. The duty cycle of each source.
  7. The source operator's position in relation to each source.
  8. Any additional information which is reasonably necessary to assess compliance of the sources with the provisions of N.J.A.C. 7:28-42.

#### 7:28-48.6 Amendments to the Radiation Assessment Documents

An owner shall notify the Department in writing within 30 calendar days of any change in the information contained in the Radiation Assessment Document.

#### 7:28-48.7 Initial registration fee and annual renewal fee for nonionizing radiation producing sources

- (a) An owner shall remit to the Department the initial registration fee or annual renewal fee no later than 30 calendar days after the owner's receipt of the bill issued by the Department.
- (b) An owner shall pay the fees for initial registration and annual renewal as follows:

Source Category		Initial Registration Fee	Annual Renewal Fee
1.	Radiofrequency heaters and sealers, per location		
	One Source	\$180.00	\$160.00
	Two Sources	\$305.00	\$285.00
	Three Sources	\$415.00	\$395.00
	Four Sources	\$565.00	\$545.00
	Five Sources	\$675.00	\$650.00
	Six Sources	\$795.00	\$770.00
	Seven Sources	\$910.00	\$890.00
	Eight Sources	\$1,010.00	\$990.00
	For each additional source at the same location, add:	\$90.00	\$90.00
2.	Microwave heaters, sealers and industrial ovens, per location		
	One Source	\$125.00	\$125.00
	Two Sources	\$220.00	\$225.00
	Three Sources	\$325.00	\$330.00
	Four Sources	\$415.00	\$425.00
	Five Sources	\$505.00	\$520.00
	Six Sources	\$600.00	\$615.00
	Seven Sources	\$705.00	\$725.00
	Eight Sources	\$805.00	\$830.00
	For each additional source at the same location, add:	\$80.00	\$85.00
(c)	An owner remitting an initial registration fee or annual renewal fee shall mail a check or money order, payable to <u>A</u> Treasurer, State of New Jersey, <u>≡</u> to the Department at the following address:		
	State of New Jersey Department of Environmental Protection Bureau of Revenue CN-417 Trenton, NJ 08625-0417		
(d)	An owner who fails to remit the initial registration fee or annual renewal fee within 30 calendar days after the owner=s receipt of the bill shall be assessed a late charge, which is 20 percent of		

the amount of the billed fee.

- (e) The registration of an owner who fails to submit an annual renewal fee within 60 calendar days after the owner's receipt of the bill shall be considered expired.
  - 1. An owner whose registration has expired pursuant to this subsection shall, upon a written request transmitted to the Department within 30 calendar days of the expiration of the registration, be afforded the opportunity for a hearing thereon in the manner provided for contested cases pursuant to the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq.
  - 2. Requests for hearings shall be sent to the Office of Legal Affairs, ATTENTION: Adjudicatory Hearing Requests, Department of Environmental Protection, CN 402, Trenton, NJ 08625-0402.
- (f) An owner who allows the registration of a source to expire by failing to remit the annual renewal fee within 60 calendar days after the owner's receipt of the bill shall be required to file a new registration form along with the appropriate initial registration fee listed in (b) above.
- (g) Fees submitted to the Department are not refundable.

**7:28-48.8 Sale of a nonionizing radiation producing source or transfer of a controlling interest; termination of registration upon sale of nonionizing radiation producing source or upon transfer of controlling interest.**

- (a) A person who sells or otherwise transfers either (i) a nonionizing radiation producing source, or (ii) a controlling interest in the owner of such a source, shall notify the Department in writing at least 30 calendar days before the sale or transfer occurs. The transferor shall include the following information in the notice:
  - 1. The name and address of the transferee; and
  - 2. The date of the proposed sale or transfer occurred.
- (b) Unless the procedures set forth in either (c) or (d), below, are followed, the registration of a nonionizing radiation producing source shall terminate upon the sale of the source or upon the transfer of a controlling interest in the person who owns the source.
- (c) The registration of a nonionizing radiation producing source shall not terminate upon the sale of the source or upon the transfer of a controlling interest under (b), above, and shall be transferred to the transferee, if the transferee certifies to the Department in writing that it will assume all of the transferor's liabilities in connection with:
  - 1. Any deficiencies in the operation of source that would result in a violation of any of the provisions of N.J.A.C. 7:28-42; and
  - 2. All penalties arising in connection with the source from occurrences or circumstances existing before the date of the sale or transfer.
- (d) The registration of a nonionizing radiation producing source shall not terminate upon the sale of the source or upon the transfer of a controlling interest under (b), above, if the transferor takes the actions required of the transferor under the following procedure:
  - 1. The transferor shall notify the Department in writing of the proposed sale or transfer, prior to the sale or transfer in accordance with (a), above;

2. The Department may, in its discretion, perform an onsite audit of the nonionizing radiation producing source. If the Department performs such an audit, it shall be completed within 90 calendar days after receipt of a notice under (d)1 above;
  3. Within 45 calendar days after the deadline for completion of the audit in (d)2 above, based on the audit and/or review of Department records, the Department shall either:
    - i. Issue to the transferor a notice stating that there are no deficiencies in the operations of the nonionizing radiation producing source and that no violations exist; or
    - ii. Issue to the transferor a report of all deficiencies and on or more notices of prosecutions or administrative orders; and
  4. The transferor corrects all deficiencies and pays all the penalties noted in (3), above.
- (e) If the registration of a nonionizing radiation producing source continues pursuant to the procedures set forth in either (c) or (d) above, the transferee shall operate its nonionizing radiation producing source in compliance with this subchapter and all applicable provisions of this chapter.
- (f) If the registration of a nonionizing radiation producing source terminates pursuant to (b) above, the transferee shall submit an initial registration form and the appropriate initial registration fee within 30 calendar days after it takes possession of the nonionizing radiation producing source or assumes a controlling interest in the owner of such a source, unless it is the intent of the transferee to dispose of the source. If the transferee operates the nonionizing radiation producing source before it submits the completed initial registration form, the transferee shall be in violation of N.J.A.C. 7:28-48.3.

#### 7:28-48.9 Disposal of a nonionizing radiation producing source

- (a) Whenever an owner disposes of a nonionizing radiation producing source, as listed in N.J.A.C. 7:28-48.3 (a) and (b), the owner shall give written notification to the Department within 30 calendar days after such disposal. The owner shall provide to the Department a complete description of the final disposition of the source.
- (b) The registration of a nonionizing radiation producing source shall terminate upon the disposal of the source.

#### 7:28-48.10 Exemption from registration and payment of initial registration fee and annual renewal fee

- (a) An owner of a nonionizing radiation producing source is exempt from registration and payment of initial registration and annual renewal fees if:
1. The source is not operational, and does not emit nonionizing radiation;
  2. (Reserved)
  3. (Reserved)
  4. The source is used for display purposes only, and does not emit nonionizing radiation;
  5. The source is possessed, used or stored by the United States Government; or
  6. The source is a microwave oven used to cook food for customer=s consumption in locations such as, but not limited to, restaurants, canteens, and other eating establishments, or a microwave oven purchased by a consumer for use in the home.